



PRECISE ELUCIDATION OF TRIUMPHS AND TRIBULATIONS OF WOMEN IN THE WORLD OF 'STEM'. THROUGH THE LENS OF HOPE JAHREN'S LAB GIRL.

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ABSTRACT

Women sparkled like a bunch of vibrant stars and paved an illuminating path for today's generation to walk into the world of STEM. They played a pivotal role in Science and Technology, Engineering and Mathematics. Their footprints in the field of STEM are indeed ineffaceable. Their splendidly noteworthy contributions towards STEM whipped up the interest of contemporary generation to become a part of Science and Technology, Engineering and Mathematics. Women became an inseparable feature of STEM. Hope Jahren illustrated the impact of women in STEM by dint of her memoir *Lab Girl*.

KEYWORD: STEM

1. INTRODUCTION

In the year 2001 National Science Foundation (NSF) coined the term STEM. Science, Technology, Engineering, Mathematics are together clipped by its initialism STEM. It is a field known for invention and innovation. The term circulates in and around educational curriculums. Certain countries were engrossed to enhance Science and Tech fields and they anticipated a fine number of budding Engineers and Scientists. Spotlight were thrown on STEM around 2000. National Academics of Sciences, Engineering and Medicine published a report under the title "Rising Above the Gathering Storm", this report accentuated the importance of STEM to the society. People showed keen interest on STEM education, they accumulated infos and explored more about STEM. Because they gradually understood that the future economy will be reliant on STEM field to the hilt.

2. IMPRESSIVE ROLE OF WOMEN IN STEM.

In the days of yore, women were designated with only a handful of jobs. Society shackled them with imperceptible codes and customs, and sadly they abided to it. Certain field of areas like Science and Technology, Engineering and Mathematics doesn't welcome women. Though they were proficiently skillful in those areas, opportunities were shut before their face. Her flairs have been denied, just because she is a woman. But they unshackled themselves from those old canons, struggled persistently and in today's era women wizardly imprinted their identity in all the field of works, especially their impressive role and their splendorous contribution in the world of STEM are evident.

3. A CONCISE DESCRIPTION OF A PROMINENT RESEARCHER.

Anna Hope Jahren is a renowned American Geo-biologist and Geo-chemist. She is an award-winning researcher and scientist who pursued her Ph.D. at the University of California, Berkeley and she is pursuing her research in Paleo-biology since 1996. She commenced her life as a teacher and as a researcher initially at the Georgia Institute of Technology and then at John Hopkins University. 'The Second Methane Hydrate Release Event' is a striking invention by Jahren which made people go awestruck. From the year 2008 to 2016 she held a professorship at the University of Hawaii in Honolulu. While working there, she

created her own lab for Isotope Geo-biology by receiving funds from National Science Foundation (NSF), the National Institutes of Health and the Department of Energy. She is the only woman who have been awarded the 'Young Investigator Medals' by the Earth Sciences and she possess three Fullbright awards in 1992, 2003 and 2010. Currently she is working as an exuberant professor at the University of Oslo, Norway. *Lab Girl* (2016) and *The Story of More* (2020) are her couple of groundbreaking works which got her a recognition as a remarkable writer.

4. A BRIEF SKETCH OUT OF HOPE JAHREN'S LAB GIRL.

Lab Girl is a soul-stirring coming of age novel from the pen of Hope Jahren. In this astounding piece of work she chronicled her own life experiences and torments as a researcher, teacher, and how she battled to bring herself up as a notable scientist. In this memoir she also penned down her immense love and passion towards plants and greenery. Above all, she delineated her notions about the hardships of women who strived to hold a place in the field of STEM. This bestselling memoir is divided into 3 parts: part one - Roots and Leaves, part two - Wood and Knots and part three - Flowers and Fruit.

Part one: Roots and Leaves revolves around Jahren's childhood and her teaching career. Jahren grew up in a small town in Minnesota. She always used to spend a fine amount of time in her father's laboratory, who is a teacher of science in a community college. At the University of Minnesota, she pursued her Bachelor's degree in Geology and she completed her Ph.D. in Soil Science at the University of Berkeley. While she was working as a teaching assistant in Berkeley, she developed an indelible friendship with Bill Hagopian, a true companion of Jahren, who travels with her till the end of the story. Jahren commenced her career as a teacher at Georgia Tech, where she set up her first laboratory. In this part Jahren also recorded the life process of plants, she also highlighted the functions of roots and leaves.

Part two: Wood and Knots portrays her life as a teacher. She kept pegging away to receive grants for her research, but defeat

shadowed her. She got turned down and her flairs gone unnoticed just because she is a woman. Misogyny ruined Jahren's life. Her lack of sleep and her poor diet worsened her health and she got affected by Maniac-depressive disorder. She doesn't treat her symptoms properly and skirmished with herself due to mental and physical exhaustion. Throughout her affliction, Bill stood by her side and aided her with all he can. At the end of this part Jahren got a job at John Hopkins and moved there with Bill. This part also chronicles the mishaps of plants.

Part three: Flowers and Fruit depicts Jahren's personal and professional life at John Hopkins. She took medications for her illness and tried to recover from it. She received funds for her research. She snatched victory from the jaws of defeat and started to shine in her field. She gradually got stabilized both in her personal and professional life. She met Clint and married him. She got pregnant but undergone a complicated pregnancy and gave birth to her loving son. Eventually Jahren, Clint, their son and Bill went to Hawaii, and there Jahren continued her role as a teacher. In the last part Jahren pictured about plant's growth and reproduction, and also human's soulful connect with plants.

5. TRIUMPHS AND TRIBULATIONS OF WOMEN IN THE WORLD OF STEM, THROUGH THE LENS OF HOPE JAHREN'S *LAB GIRL*.

"Her wings are cut and then she is blamed for not knowing how to fly." (Simone de Beauvoir's *Second Sex*). Women are oppressed by the male dominant society, from the moment when they were born as women. They are manacled both mentally and physically by outlandish ordinances. Hope Jahren's mother Ida Mae Jahren's life is a best instance for this. Her mother dreamt of etching her identity as a scientist to this world. Her brilliance in science provoked her of becoming a scientist. During her schooling she was crowned with a recognition of an honorable mention in the 'Ninth Annual Nationwide Westinghouse Science Talent Search.' But Hope Jahren bitterly states that "it was an unusual recognition for a female growing up in a rural area." (Hope Jahren's *Lab Girl*, chapter 1, p.18). Throughout the story, her mother was portrayed as a character of dissatisfaction, because she is mad at the society for clipping off her dreamy wings. She is mad because, she was forced to give up on her dreams. Ida Mae Jahren is a dejected representation of women who are fighting a losing battle against their dreams in this patriarchal society.

Still men are trying to clip off the wings of women, but even though their wings are being slashed, they never fail to soar high and touch the sky. Women in the world of STEM explicitly proved that even sky is not their limit. The journey of those accomplished women is not just a piece of cake, they moved heaven and earth to make such a clean sweep. Those women achievers of STEM will always be remembered for their inspirational master strokes.

Hope Jahren obliquely acknowledged these women writers in her autobiographical memoir, via her own character. Hope Jahren spent most of her childhood hours in her father's laboratory. She used to play with the lab equipment and from that point of time, deep down she sensed that science is where she belongs to. Her father's laboratory gave her a cozy feeling than her own residence. "Extension of my indestructible mother." (Hope Jahren's *Lab Girl*, chapter 1, p.21). Unconsciously her mother's unfulfilled dream instigated her to obtain an identity in Science and Tech fields. She developed an inseparable rapport with science and she tried to bring out the scientist inside her.

Jahren commenced her science career at the University of

Minnesota, where she took science as a major subject. She burned the candle at both the ends by balancing her studies and her work at the University hospital by accepting an onerous task of filling intravenous bags with various medicines. This incessant cycle of Jahren eventuated in insomnia. After working at the University hospital, she bounced back to working in her most favourite and comfortable place, Lab. Then by the support of her teachers, she started her journey of Ph.D. in soil science at the University of Berkeley and it was an up hill battle in Jahren's life to complete her Ph.D. She also gained an experience as a teaching assistant while pursuing her Ph.D. After her Ph.D. journey, she accepted a job as a faculty at Georgia Tech and moved in there with her friend Bill. In Atlanta she started working towards her dream of constructing her own research lab. But things doesn't move as she devised. Jahren states that the researchers are extremely dependent on the three-year funding cycle, so the competition for funding pitched high unexpectedly. Jahren found research funding as a hard nut to crack. In the meantime process, she stumbled to balance both her career and her dreams. Though she found the path of success to be strenuous, she doesn't relinquish on her dreams. In this arduous journey she failed to care about herself which eventuated in Maniac-depressive disorder, the most gloomy episodes of Jahren's life which clouded her valour. But she wanted to win the game. Amidst these obstacles she made an accomplishment by inventing 'The Second Methane Hydrate Release Event' that existed 117 million years ago and this discovery of Jahren was a stroke of genius. She diverted herself by giving more focus on her students. Bill and Jahren took the students to the field trip to study soil science in a lively manner. During this trip Jahren explored more about plants which induced her interest towards greenery even more. Jahren's life took a turn from being a researcher to an author. Jahren and Bill co-authored a book titled *The Getting Tree*. The next phase of their life started at John Hopkins, where Jahren successfully created her own lab. She met Clint and married him. She got pregnant and she was forced to stop her medications for her disorder. Her pregnancy journey was the most challenging part and the complications merely took her life. Since she was banned from her own lab during her pregnancy, Jahren, Clint and Bill moved to Hawaii. There Jahren was hired at a University where she started to pen down her notions of Women in Science. And today in the world of Science, she is a renowned Geo-chemist and Geo-biologist. She is proudly known for examining fossil forests dating to the Eocene by leveraging stable isotope analysis. She also authored a handful of works regarding stereotypes and sexual harassment faced by women in the Science world.

Hope Jahren is a prowess representation of women who tasted success after encountering numerous obstructions in the world of STEM. Through her noteworthy memoir *Lab Girl*, she palpably depicted the triumphs and tribulations of women, that too through her own self-sustaining character. Usually women witness snags rather than success in whatever field they opt for, that too setbacks are umpteen when it comes to work fields where they are prohibited. STEM is one such field where women struggled to prove themselves, that they are worthy enough than men to sustain in that field. The predecessors of STEM thought Science and Technology, Engineering and Mathematics are technically a tough genre where women cannot stand. Even though they are capably proficient to work in such fields, they are under-represented. As mentioned by Hope Jahren in her *Lab Girl*, men are granted more funds than women. Indeed women are manifesting progress in STEM, but still men are dominating them. Women are dehumanized that they will not be an appropriate choice to work in STEM. They are completely marginalized and their talents are squandered just because she is

a woman.

But no matter how many times she was burnt into ashes, she raised above all, like a Phoenix. No matter how deep they go down in defeat, they jumped through hoops and made to exhibit their names in the pages of history. Some of the striking women achievers who is known for their audacious achievements are; Janaki Ammal: First Indian Scientist who received Padma Shri Award in 1997, Kalpana Chawla: First Indian Astronaut who soared into space, Rajeshwari Chatterjee: First Women Engineer from Karnataka, Marie Curie: Who is known for her Invention of Radium and Polonium, Katherine Johnson: A Renowned Mathematician, Dorothy Hodgkin: Who is remembered for her Discovery of Structure of Insulin, Rosalind Franklin: Her contribution to the Helical Structure of DNA is noteworthy, Ada Lovelace: First Computer Programmer and Alice Ball: Who discovered Medication for Leprosy. And still the list exceeds. These women are an inspiring examples for the budding teachers, scientists, researchers and engineers who are yearning to give life to their dreams.

6. CONCLUSION

“A woman must have money and a room of her own if she is to write a fiction.” (Virginia Woolf's *A Room of One's Own*). This quote profoundly describes how a women ought to be in this male-driven society. In this quote 'Room' means that, women must have a space for themselves where men should not question them and should not impede their freedom, a space for themselves where they can fulfil their dreams which paves a path towards their identity and to uplift their financial status. Nothing can bolster women other than their own goals and career. So, the most mandatory aspect that women need to procure is that, they must be economically independent. She can be an affectionate mother, a caring wife, a loving daughter and a kind sister but at any cost, she should not tend to lose her identity.

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